

REMARKS

Claims 1-49 were pending in the application. Claims 1, 16, 27, 28, 37, and 44 have been amended. Claims 15, 38-43, and 47-49 have been canceled without prejudice. No new matter has been added by way of the foregoing amendment. Further and favorable consideration of the application is respectfully requested.

CLAIM OBJECTIONS

Claim 1 was objected to because of informalities. Per the Examiner's suggestion, claim 1 amendments include "extending about the surface of the substrate." Therefore, the Applicants kindly request the objection be withdrawn.

CLAIM REJECTIONS - §112

Claim 38 was rejected under second paragraph of 35 USC §112. Claim 38 has been canceled, without prejudice. Thus, the rejection is now moot.

CLAIM REJECTIONS - §103

Claims 1, 5-9, 11-12, 15 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy et al (U.S. Publication No. 2005/0079660) (Murphy) in view of Bohr et al (U.S. Publication No. 2004/0262683) (Bohr). Claims 2-4, 13-14, 16-22, 24-33, 35-37 and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy and Bohr as applied to claims (1 and 44) above, and further in view of Dawson et al (U.S. Patent No. 5,963,803) (Dawson). Claims 10, 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy, Bohr and Dawson as applied to claims (16, 28) above, and further in view of Biebl et al (U.S. Patent No. 5,913,115) (Biebl). Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy in view of Bohr and Wu (U.S. Patent No. 6,194,258) (Wu). Claims 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy, Bohr and Wu as applied to claim 47 above, and further in view of Dawson. Claims 38-39 and 42

are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo et al (U.S. Publication No. 2004/0173815-previously cited) (Yeo) in view of Murthy. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo and Murthy as applied to claim 38 above, and further in view of Bohr. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeo and Murthy as applied to claim 38 above, and further in view of Dawson. Claims 1, 5-9, 11-12, 15 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohr in view of Wieczorek et al (U.S. Patent No. 6,274,894) (Wieczorek). Claims 10, 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohr, Wieczorek and Dawson as applied to claims (16, 28) above, and further in view of Biebl. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bohr in view of Wieczorek and Wu. Claims 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohr, Wieczorek and Wu as applied to claim 47 above, and further in view of Dawson. Applicant traverses these rejections on the grounds that these references are defective in establishing a *prima facie* case of obviousness with respect to the claims.

In *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007), the Court stated that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *Id.* at 1741.

As the PTO recognizes in MPEP §2142:

... The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness...

In the present application, a *prima facie* case of obviousness does not exist for the claims as herein amended for the reasons set forth below.

The Examiner has not shown that all words in the claim have been considered

MPEP 2143.03 states that “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” Quoting *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970). However, in the present matter, the Examiner has not shown that all words in the claim have been considered.

Claim 1- Murphy + Bohr

As indicated above, the Examiner rejected claim 1 over Murthy in view of Bohr. The Examiner states that Murthy does not disclose source/drain regions disposed entirely below the surface of the substrate. Instead, the Examiner asserts this is provided by Bohr. In particular, the Examiner states that the regions 203 of Bohr’s Figure 6 provide the relevant disclosure. The Applicants respectfully disagree.

First, the junction 203 do not provide for “recessed” source/drain regions as the term is known in the art. As illustrated in Fig. 3, the junctions 203 are formed coplanar with the surface of the substrate 105. Exemplary recessed source/drain regions are illustrated in Fig. 1 region 176 of the application at issue. Furthermore, the Examiner has admitted as much in the rejection of claim 1 over Bohr in view of Wieczorek providing “Bohr does not disclose that the first source/drain regions 203 of the NMOS are recessed.” OA at pg. 15.

Second, the Applicants submit that the Examiner has not considered the limitation of an etch stop layer as provided in claim 1, as amended. The Examiner has asserted, with reference to now canceled claim 15, that Bohr teaches an etch stop layer as layers 663 and 664. However, as is clear from Fig. 6, reproduced below, neither layer 663 nor layer 664 extend below the interface of the gate and a substrate. For example, at source/drain regions 203, the bottom of the layer 663 is planar with surface of the substrate and the interface of the gate and the substrate.

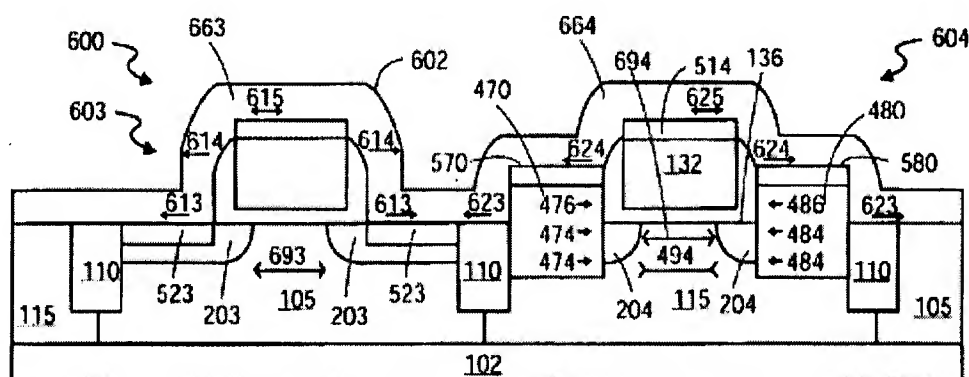


FIG. 6

To any extent that the Examiner alleges in response that “dimensional limitations are prima facie obvious” (see pg. 4 of OA), the Applicants respectfully disagree as to the applicability of cited case law and MPEP section. Dimensional limitations are not at issue, but a structural requirement. Furthermore, as provided in the specification at issue and claimed first and second strain, the etch stop layer has a specific purpose which the claimed configuration requires.

Claim 44 – Murphy + Bohr rejection

Independent claim 44 also was rejected under the combination of Murphy and Bohr. For reasons similar to as described above, the Applicants submit that this rejection should also be withdrawn. As described above, the Examiner argues that Bohr provides for the recessed source/drain region in disclosing junction region 203. However, Bohr described forming region 203 in Fig. 3, reproduced below.

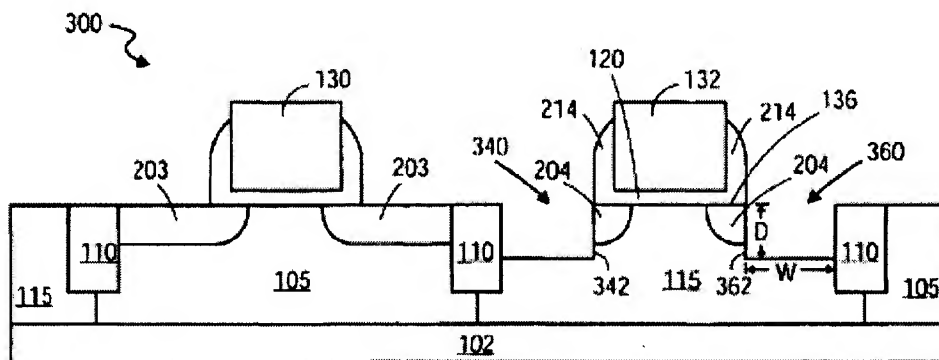


FIG. 3

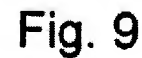
In describing Fig. 3, Bohr discloses “Thus, NMOS junction regions 203 may be formed, such as by doping portions of P-type well 105 to form those junction regions.” [0018]. Bohr does teach forming a “PMOS junction region void 360” and depositing material in the void to “a height extending above surface 136.” [0022]. However, this region does not provide for using such voids to form a recessed source/drain region where the region lies entirely below the surface as claimed. In contrast, the voids 360 are used to form a region extending above the surface of the substrate as illustrated in Fig. 6.

Claims 16 and 28 – Murthy, Bohr, and Dawson

As indicated above, the Examiner has rejected claims 16 and 28 as obvious over Murthy in view of Bohr in view of Dawson. Claim 16 requires “an etch stop layer...extend[ing] below the imaginary plane extending from the interface of the first gate and the substrate.” For reasons substantially similar to as described above with reference to claim 1, the Applicants assert the Examiner has not considered this element of claim 16 as amended. The rejection should be withdrawn for at least these reason. Claim 28 requires “an etch stop layer...extend[ing] below the first interface [between the substrate and the gate], wherein the etch stop layer is at least one of a tensile and a compressive film.” Also for substantially similar reasons as described above, claim 28 is allowable. Dawson does not cure this deficiency of Murthy or Bohr, nor does the Examiner contend so.

Claim 1- Bohr in view of Wieczorek

As indicated above, claim 1 was also rejected as obvious in light of Bohr in view of Wieczorek. In particular, the Examiner asserts the relevant structure is provided by Fig. 6 of Bohr, except that “Bohr does not disclose the first source/drain regions 203 of the NMOS are recessed.” OA at pg. 15. The Examiner asserts the recessed source/drain regions are provided by Wieczorek’s Fig. 9 disclosure of regions 56. Fig. 9 is reproduced below.



Claims 16, 28, and 44

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Furthermore, claim 28 requires a contact coupled to a first source/drain region recessed in a substrate to extend below the surface of the substrate. The Examiner points to Fig. 6 of Bohr as disclosing the relevant functionality in contact 523 to the source/drain region 203. The Applicants respectfully assert that the Examiner is being inconsistent. At times, the Examiner is citing to the device of Wieczorek as providing the first source/drain region claimed, and at other times, to the device of Bohr as providing the same first source/drain region. It is unclear to the Applicants how it can be a predictable combination (as required by MPEP 2143.01) or even a possible combination, to have the distinct source/drain configuration of Wieczorek and Bohr together on the same device (e.g., the NMOS device 600 of Bohr).

Furthermore, claim 16 has been amended to further define the source/drain region as having a top surface that lies below an imaginary plane at the interface of the gate and substrate. As is clear from Fig. 9, a top surface of portions 56, asserted by the Examiner as providing these claimed source/drain regions, clearly lie coplanar with the interface of the gate and substrate. Therefore, for at least this reason, the claim should be allowable.

Dependent Claims

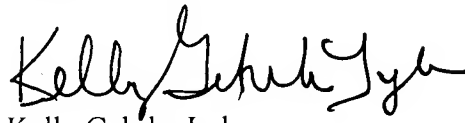
Dependent claims 2-14, 17-27, 29-37, and 45-46 depend from and further limit independent claims 1, 16, 28, and 44 and therefore are deemed to be patentable over the prior art.

Conclusion

It is believed that all claims are in condition for allowance. Favorable consideration and an early indication of allowability are respectfully requested.

Should the Examiner deem that an interview with Applicants' undersigned attorney would expedite consideration, the Examiner is invited to call the undersigned attorney at the telephone number indicated below.

Respectfully submitted,



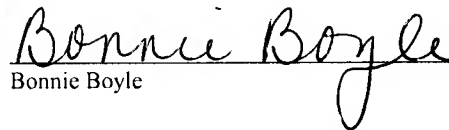
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